


452.116
ABSTRACT OF PRESIDENT'S
ADDRESS DELIVERED BE-
FORE THE ASSOCIATION OF
LIFE INSURANCE MEDICAL
DIRECTORS BY AUGUSTUS S.
KNIGHT, M.D., MEDICAL DI-
RECTOR METROPOLITAN
LIFE INSURANCE COMPANY
NEW YORK

October 20th, 1921

LIBRARY
U. S. PUBLIC HEALTH
WASHINGTON, D. C.



PRESIDENT'S ADDRESS

A. S. KNIGHT, M.D.

Gentlemen—We are coming together most happily now, after another year of unprecedented prosperity of life insurance companies. The anxious expressions of 1918 and 1919 have long since left the faces of Medical Directors, many of whom were expected at that time by their Executives to immediately stop the ravages of influenza with its death claims that appeared to be wiping out everything in sight; and they and the Doctors in general were severely blamed then by those Executives for not knowing just how to prevent and to cure that disease with its dreadful complications. The year of exceedingly low mortality and of great increases of business that followed in 1920 brought us happily and with few cares to the Annual Meeting last October. But now in 1921 we have had throughout the United States and Canada a general death rate even lower, so that in this Company of ours, for instance, the rate for the first nine months of this year both in the Ordinary and Industrial Departments was about one-fifth less than for the same period last year, although 1920 was the lowest one on record.

We still have our work and our routine problems, not the least of which is to find medical examiners in the Field, who are still willing to do careful, painstaking work and at fees which the Companies can afford to pay out of the premiums received. But with all the disturbances of financial structures around us, we are carefree in the knowledge that these life insurance companies by which we are employed are absolutely sound and successful, and it seems to me, therefore, that this is a good time to dig into our experiences

and see what we can learn and profit by them.

I shall therefore present for your consideration two studies. The first is the Final Report on Mortality of Cases Rejected During 1905 to 1915 Because of Urinary Impairments. The work was done by LOUIS I. DUBLIN, Ph.D., Statistician of the Metropolitan Life Insurance Company, and it is to him that I am indebted for these facts. (A technical discussion of this subject then followed).

PERIODIC HEALTH EXAMINATIONS

The second study for your consideration is that of Periodic Health Examinations. There is such widespread inquiry and consideration nowadays by business men, heads of institutions, physicians in charge of Industrial plants, and by Medical Directors and Executives of life insurance companies as to whether periodic examinations of employees or of policyholders, coupled with proper advice to those who are found to have impairments, are worth while—whether the resulting mortality among those who are thus examined is in fact sufficiently lowered to pay for the cost of it—and these questions are so difficult of categorical answer, so increasingly difficult when the complete actuarial demonstrations are required—that I think it may be profitable to present here as fully and as fairly as I can the experiences which the Metropolitan Life Insurance Company has been having with periodic health examinations of its Ordinary policyholders by the Life Extension Institute since February, 1914. Since that time the descriptive leaflets about the privilege have been sent to every Ordinary policyholder with every premium notice. These leaflets urge the examinations, tell the policyholders that the results will not be

furnished to the Company, that these are strictly confidential between them and the Institute, which is a separate corporation, and that the examinations will not affect their insurance in any way. The leaflets also tell how if they are insured for \$1,000 they can be examined after the policy has been in force for four years and every fourth year thereafter; if for \$2,000, after it has been in force three years, and every third year thereafter; if for \$3,000 after it has been in force for two years, and every second year thereafter, and if over \$3,000, after it has been in force for one year and every year thereafter. The Institute has described the examination that it gives as:

(1) A statement (made principally by the policyholder himself) of the physical condition and personal and family history of the policyholder.

(2) A thorough physical examination by the Institute's local examiner, covering an examination of the heart, lungs, abdominal organs, nervous system, vision, nose and throat, physique, blood pressure, and general bodily condition.

(3) An examination of the urine at the Home Office Laboratory of the Institute covering chemical and microscopical conditions.

Under this privilege during the seven years and seven months—February, 1914, to July 31, 1921—94,998 initial and subsequent examinations have been authorized and this is about 7.83% of the estimated maximum number of eligible requests that could have been received, which is 1,214,000. And of these that asked for those examinations and had them authorized, 62,478 actually were examined completely or partially and this is about ~~5.15~~ 5.15% of the 1,214,000 that could

have been examined. As to the matter of cost of the examinations, the Company has paid the Institute:

Year 1914	\$11,346.40
Year 1915	10,733.05
Year 1916	10,474.35
Year 1917	25,284.60
Year 1918	38,533.85
Year 1919	43,569.95
Year 1920	44,050.55
Year 1921—First 7 months	<u>41,114.30</u>

Total amount paid during
7 years 7 months . . . \$225,107.05

It can be seen at a glance that most of these examinations were of too recent date to permit of much enlightenment from a study of the subsequent mortalities among them, but our Statistician, Dr. DUBLIN, has made an exhaustive survey of those who were examined during the first two years of the experiment—1914 and 1915—and those examined in later years can be studied similarly when the experiences are old enough. For this purpose and for this statistical study only the original examination records were put at our disposal by the Institute. Our study covered 5,987 males whose physical examinations were complete. We also have a record of all subsequent examinations made on these persons.

Our method of study was to determine the actual mortality experienced by these 5,987 male persons during the years subsequent to their first examination up to November 15, 1920, when the period was arbitrarily closed. We compared our findings, with due regard to the age of the examined, with the expected mortality according to certain standard tables.

The group as a whole had an exposure of 33,629 years, making an average of about five

and one-half years per person since the initial examination. The tracing through the Company's records showed that there had been actually 217 deaths among the close to six thousand persons during this period. There should have been 412 deaths according to the American Experience Table, and 303 deaths according to the American Men Table (Ultimate). In other words, the group as a whole, gave a mortality rate 53 per cent. of the American Experience Table, and 72 per cent. of the American Men Table (Ultimate).

The policyholders examined by the Life Extension Institute had a lower death rate than that expected by the various tables at practically every age period. By age groups the actual mortality compared with the expected by the American Men Ultimate Table, follows and shows a favorable mortality for all age groups except 70 and over, bearing in mind, however, that the exposures for ages under 30 were insufficient to give reliable data, it seems as though the favorable mortality for the group as a whole resulted from the very favorable experience among those aged 40 to 60, inclusive.

ATTAINED AGE	PER CENT. ACTUAL CLAIMS TO PROBABLE A. M. (5)
Under 30	88
30-39	96
40-49	78
50-59	53
60-69	97
70 and over . . .	101

It is evident that these examined persons were highly self-selected and very favorable lives. This is confirmed by the fact that about one-half of them actually had \$5,000 or more of insurance in the Company at the time of their examinations. They represent economi-

cally the most select lives in the Ordinary Department, in their favorable occupations and in their knowledge of and interest in personal hygiene and probably in their determinations to follow such courses as will keep them well and prolong their lives. All of these points help to explain the very low death rate which occurred among them.

To determine further the value of the examinations, we must take into consideration the constituency of the group examined. We must determine the kind and the extent of the impairments found at the time of these examinations and determine the mortality of the respective classes into which the material must be divided. In this connection we had the assistance of Assistant Medical Director Coolidge, who went over the records with the Statistician and evaluated the impairments found. As the result of this work, we were able to divide our material into four main classes. The first consisted of 1,620 persons, or 27 per cent. of the total, whose defects were so trivial that we did not hesitate to consider them Preferred risks. These persons would correspond to our best \$5,000 Whole Life policyholders, with their mortality expectations of 100% or less. The second group consisted of 1,269 persons, or 21 per cent. of the total, who showed minor impairments on the examination, such as slightly thickened arteries, some digestive disturbance, functional heart defects, etc., which would have justified issuing Ordinary insurance on their lives but would have excluded them from the \$5,000 Whole Life group according to our present Medical Division standards. The third group consisted of 1,728 persons, or 29 per cent. of the total, who had no very serious impairments except that they showed albumin in

the urine in amounts from a very slight trace to and including a large trace. It is our present practice to limit the great majority of these to sub-standard policies. These three classes make up more than three-fourths (77 per cent.) of the total. The rest, a little less than one-quarter, included principally persons whose impairments would ordinarily be considered serious enough to warrant rejection for standard policies. They include persons with high blood pressure, organic heart diseases, lung troubles, and other organic diseases, although among them was a relatively small number of persons who would have been limited to Intermediate insurance with mortality expectation from 120 to 150 per cent. or to Special Class A insurance with mortality expectation from 150 to 200 per cent., or to Special Class B insurance with its expectation of 200 to 250 per cent. mortality, but their numbers are so small as not to justify any special treatment of them.

We may now consider the actual mortality as compared with the expected in each one of these four classes.

I. PREFERRED RISKS

This group, with an exposure of 9,181 years of life, had 34 actual deaths. The ratio of actual to expected on the American Experience Table was 33 per cent. and on the American Men (Ultimate) Table 47 per cent. In view of the fact that 62 per cent. of these persons were still within the first five years of their insurance, we also valued them on the American Men Select and Ultimate Table and, on this basis, found their mortality 51 per cent. of the expected, which is only slightly higher than on the Ultimate Table. The group would appear at first sight to have profited from the

service of the Institute in spite of the difficulties that must be met in improving the mortality of people already in excellent physical condition. We hesitate to draw this conclusion finally because it is impossible to say how much credit should be given to these persons for their interest in hygiene, as evidenced by their taking these examinations, many of them more than once. They are the kind of people who under ordinary circumstances avoid injurious excesses, take care of themselves and would, therefore, ordinarily live longer than even most super-standard policyholders, irrespective of whether they took these examinations or not.

That the examinations were found valuable and appreciated by the policyholders is indicated by the fact that 41 per cent. of them came back for subsequent examination. A number availed themselves of the privilege each year in spite of their fine physique.

2. ORDINARY RISKS

The second class was exposed a total of 7,111 years and had 44 actual deaths. The ratio of actual to expected deaths on the American Experience Table was 52 and, on the American Men (Ultimate) 72. In this class, 54 per cent. were within five years of their original insurance examination and were, therefore, select lives. This fact is undoubtedly an element in their favorable mortality. Few of the deaths which occurred among them were from the chronic diseases. The rate from tuberculosis was especially low, 42 per 100,000, about half that in the Ordinary Department. Bright's disease and heart disease likewise showed very low rates. There were twelve deaths from influenza and pneumonia in this group.

These people were found on examination to have such defects as functional heart disturbances, high pulse rates, somewhat thickened arteries, relatively high or low blood pressure, and other conditions which are usually considered important enough to require medical care, although not of so serious degree as to bar them from Ordinary insurance. The fact that this group had a mortality rate better than that of the Ordinary Department over the same period is a favorable indication as to the value of these examinations. Thirty-seven per cent. of this class returned for subsequent examinations.

3. CASES WITH ALBUMIN

The third group of 1,728 persons with albumin gave a total experience of nearly 9,850 years of life. There were 38 deaths among them. The ratio of actual to expected was 33 per cent. on the American Experience Table and 46 per cent. on the American Men (Ultimate) Table. In other words, this class had a mortality rate virtually the same as that of the Ordinary Preferred, who had no impairments worthy of record. This is one of the points of our study which is very startling but we must remember that albuminurias in otherwise standard lives uniformly give low mortalities in the initial period. It must be noted also that the finding of albumin among these people was limited to one examination. We cannot say that they had persistent albuminuria. Some of them undoubtedly had persistent albuminuria; others had intermittent albuminuria and the remainder only temporary or accidental albuminuria. But, even if we disregard the presence of albumin in these persons altogether and consider them for the other defects, we find that about one-

half of them had conditions which would have excluded them from the \$5,000 Whole Life policy, although they all would have been granted Ordinary insurance. In spite of these facts, these persons experienced a low death rate in the five subsequent years. In the light of their impairments, they have done well. The facts perhaps suggest that the mere presence of albumin on one examination must not be considered in itself as a serious impairment, at least not during the next five years after examination. There were only three deaths from Bright's disease among them during the entire period subsequent to the examination, or a rate of 30 per 100,000, which is about the same as in our Ordinary Department. There were four deaths from heart disease; eleven died of influenza and pneumonia; four died of tuberculosis, or at a rate of 41 per 100,000. The group has enjoyed a favorable mortality during the period subsequent to the Institute examination. Thirty-three per cent. of them returned for reexaminations in later years.

4. MISCELLANEOUS CASES

The fourth is a miscellaneous group. It is composed of 1,370 individuals, exposed for a total of 7,485 years of life. There were 101 deaths among them and the ratio of actual to expected mortality was 94 per cent. on the American Experience Table and 117 per cent. on the American Men (Ultimate) Table. This is the only group which had a higher mortality rate than obtains in the Ordinary Department. No conclusions can be drawn from the experience as a whole, however. It is too heterogeneous. There were 77 persons among them who, according to Dr. COOLIDGE, would have been granted Intermediate (120-150 per

cent. mortality) policies if they were applicants for insurance; 202 Special Class A policies (150-200 per cent. mortality); and 48 Special Class B policies (200-250 per cent. mortality). In addition, 133 would have been postponed. This makes a total of 460 persons who are the least impaired of the group; the rest, or 910, appeared to be so seriously impaired that they would have been rejected outright for any plan of insurance issued by the Company.

For the purpose of studying this group particularly, we singled out first a group of 683 from these who would have been rejected but who were fairly homogeneous with respect to the seriousness of their impairment. Some had abnormal blood pressure with various complications; a considerable number had organic heart affections, some had evidence of lung disease. They were seriously impaired lives but not as yet very sick people. They were, we thought, immediately below the grade which would have been acceptable for Special Class B insurance where the mortality of 200 to 250 per cent. is expected. Yet, this impaired group gave a ratio of actual to expected deaths on the American Experience Table of 66 per cent. and on the American Men (Ultimate) Table, 82 per cent. This, too, is an interesting showing in view of the impaired lives which went into the group. Obviously, these people are of the class which when informed of physical defects are particularly careful to lead hygienic lives.

In our anxiety to be as certain as possible whether these findings and interpretations were correct, or how they ought to be modified, we enlisted the services of our Actuaries who studied the problem, went over all the cards and checked the result. Their total figures dif-

ferred slightly from the Statistician's because they included a number of additional cases to those used in Dr. DUBLIN's study, and they found a very few more deaths that had occurred during the period but that had not been reported at the Home Office before the Statistician's studies were finished. Nevertheless the general results that they obtained were very much the same "raising the total from 53 to 57 per cent. on the American experience and still indicating light mortality." And inasmuch as these policyholders under study were all examined by the Institute in 1914 or 1915 the Actuaries took our total Ordinary experience on policies issued prior to 1915 and tabulated the experience by years of duration, making the policy years date from July 1st of one year to June 30th of the next year, and compared the mortality by years with that of the Institute cases. During the year July 1, 1915, to June 30, 1916, the cases examined by the Institute showed a mortality of 39 per cent. of the American Table, while the total Ordinary policies showed a mortality of 70 per cent. During the next year the total mortality remained the same, but the mortality on the lives examined increased from 39 to 47 per cent. The mortality experience of the Ordinary policies for the five years compared with the experience on those cases examined by the Institute appears in the following table:

Table showing Percentages of American Table experienced in each year from July 1, 1915, to June 30, 1920, on total ordinary policies issued prior to 1915 and on policies of those examined in 1914 and 1915 by the Life Extension Institute.

YEAR	TOTAL ORDINARY POLICIES. PER CENT. OF EXPECTED	EXAMINED BY LIFE EXTEN- SIONINSTITUTE. PER CENT. OF EXPECTED	PER CENT. OF TOTAL FOR INSTITUTE
July 1, 1915 to June 30, 1916 }	70	39	56
July 1, 1916 to June 30, 1917 }	70	47	67
July 1, 1917 to June 30, 1918 }	73	62	85
July 1, 1918 to June 30, 1919 }	112	87	78
July 1, 1919 to June 30, 1920 }	66	60	91

The increasing scale indicates that had the experience been taken for the second five years instead of the first five years, the mortality ratio would not have been so low. It is the low mortality in the early years that makes the low ratios for the entire period. This point is especially important with reference to the large number of cases of albumin that were found among the examined. Experience has shown that those who show the presence of albumin have a relatively low mortality during the first five years after examination. For

example: In the Medico-Actuarial investigation, it was shown that albumin cases had a mortality of 78 per cent. for the first five years and 200 per cent. for the next five years. This result for the first five years tallies also with the Metropolitan's experiences as reported by Dr. OGDEN. Those who had albumin had a particularly low or favorable mortality for this initial period. What the future will show among these people is another question, although we already have some information that the rate of mortality increases with duration of policy. It would, therefore, be safe to say that the benefits of the Life Extension examinations are pretty well limited to the years immediately following the examinations, and run out at the end of about five years.

Now then, with all these facts at hand, let us try to see, if possible, what money saving, if any, there has been for the Metropolitan Life Insurance Company from these Life Extension Institute examinations. With this in mind, we compiled an experience on our Ordinary policies using the same proportion of business by years of issue and the same proportion of \$5,000 Whole Life policies as that prevailing in the Institute cases. This control experience was observed from the years 1915 to 1920. We thus obtained the annual mortality on a group very similar to those examined by the Institute except as to the average amount of insurance per policy (being about three times that of the average policy in the Ordinary Department) and, also, that the control group were not medically reexamined lives. The difference between the death rates of the two sets of figures is the first indication of the saving for each one of the five years of the experience. To obtain the ultimate saving, select death rates for the first

five years were computed assuming American Men Ultimate mortality thereafter. To calculate the mortality gain, select commutation columns on a three and one-half per cent. interest basis were constructed. The present value of the total mortality gains as of July, 1920, was computed as \$126,477. From this amount must be subtracted the cost of the original and the subsequent examinations made on the 6,000 persons examined by the Institute. This was approximately \$40,000. The net gain was \$86,000, and if we deduct Home Office expenses of \$8,900 it still leaves a profit of \$77,100.

It would appear, therefore, that the Company has on this particular group of people had its principal returned and made a 200 per cent. profit on this investment, during a period of approximately five years, provided that the subsequent experiences on these lives does not exceed the expected according to the American Men Table.

I must not be interpreted as saying that any one arranging for a series of examinations, such as the Institute gives, say, for a group of employees in a factory, will save \$2 over a return of \$1 expended in the period of the first five years. Much will depend upon the character of the examinations and also upon the group that is selected for the examinations, and to a far greater extent whether the examinations are optional or not. In our case, the group selected itself. In a factory or other establishment, it might be arranged to have every one take the examinations. Personally, I would not expect a similarly favorable result to follow, although the after-results might very well justify the expenditures incurred in making such examinations. I should be seriously disappointed if they did not. The em-

ployer might gain enough from the added efficiency of his employees to pay the entire expense, quite apart from the lessened mortality and morbidity. But our results must not be taken without reservations as an indication of what would follow if a whole group of persons were examined, irrespective of their own wishes. I emphasize this point, especially because I am much impressed with the importance of the factor of self-selection. The Metropolitan policyholders sought out these opportunities, and came for these examinations year in and year out, even though many of them showed no serious impairment. They were persons who take their personal condition seriously and who do the usual things to protect themselves from ill-health. They are a special lot of people, quite unlike the usual run of policyholders or employees, generally. It is this fact which colors our results, and I confess my inability to measure the effect of this fact. I do not believe, however, that it is sufficiently large to negative the highly favorable results that appeared in our experience. Certainly the favorable results for the impaired lives suggest that excellent results followed and we cannot, with fairness, omit to say that this particular organization that has been making the examinations for our Company had only begun its work in 1914, so that with an incomplete equipment and with nowhere near as good examiners as compared with those it has today we have every reason to believe that the examinations and the advices that our policyholders get today are far superior to what they were given in 1914 and 1915. We therefore think that our experiences with the Institute have been more than justified, and that the policyholders have been correspondingly benefited thereby.

